

# Severe Weather Support Annex

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## Coordinating Agency

Emergency Management

## Cooperating Agencies

Public Works Department  
Fire-EMS Department  
Police Department  
Sheriff's Department  
Emergency Communications Center  
Parks and Recreation Department  
Department of Technology  
Roanoke City Schools  
All Departments

## I. Introduction

### A. Purpose

The purpose of this annex is to outline the organization, responsibilities, operational concepts, and procedures specific to response operations of forecasted severe weather emergencies. Safety of employees, citizens and visitors along with protection of property is of special emphasis and shall be improved by the use of educational campaigns, planning, warnings and evacuations.

### B. Situation

1. Flash flooding and flooding is the City's most common occurring severe weather event which causes repetitive economic and property losses.
2. Some people who are directly threatened by severe weather may ignore, not hear, or not understand warnings issued by the government.
3. Response and recovery efforts may be hampered due to critical infrastructure being damaged or destroyed.
4. The need for increased security for damaged areas of the City may exist.
5. Severe weather situations can occur at any time; therefore, equipment and procedures to warn the public of impending severe weather must be in place and ready to use at any time.
6. Severe weather phenomena in the past that have caused negative impacts in the City includes: flooding, flash flooding, tropical systems, severe thunderstorms, tornados, hail, sleet, freezing rain, snow storms, blizzards, high wind events and drought.
7. Local radio and local broadcast television stations will broadcast Emergency Alert System (EAS) messages when requested by local government officials.
8. Evacuations may occur due to impending threats or damage to structures. Mass care and human service facilities may be required.

9. A significant severe weather event may necessitate the implementation of an organized and structured donations management program.
10. Responders may have critical needs of their own due to the severe weather event.

## **C. Policies**

1. The Director of Emergency Management, or his/her designee, shall offer general guidance in the response to a severe weather event.
2. The Coordinator of Emergency Management will direct and coordinate the City's response to a severe weather event.
3. To effectively utilize EAS, the City and broadcasters must coordinate the procedures used to transmit warning message and instructions from local government to broadcasters.
4. The National Weather Service will activate the local EAS to broadcast warnings of imminent or occurring severe weather phenomenon.
5. State and Federal assistance will be sought if severe weather phenomenon causes injuries and damages beyond our response capabilities.
6. The local National Oceanic and Atmospheric Administration (NOAA) Weather Radio station will broadcast weather watches and warnings issued by the National Weather Service (NWS). Weather radios are activated when such messages are broadcast.
7. Provision must be made to provide warnings to special needs groups, such as the hearing and sight-impaired, and institutions, such as nursing homes and correctional facilities.
8. The City uses the following means to alert Emergency Management personnel to forecasted or occurring severe weather emergencies: NOAA Weather Radio, The Emergency Email & Wireless Network, VCIN, EAS, IFLOWS, and SkyWarn Storm Spotters.

## **II. Concept of Operations**

### **A. General**

1. City departments and support agencies responsible for responding to severe weather emergencies will do so generally using procedures parallel to their normal day-to-day operations.
2. Departments understand:
  - a. Safety of response personnel and equipment is the first priority;
  - b. Second priority is to protect the lives of the citizens and visitors;
  - c. Third priority is to protect the environment;
  - d. Forth priority is the protection of property; and
  - e. The fifth priority is the protection of pets, livestock and wildlife.

## B. Receiving Weather Warnings, Watches, Advisories

The City may receive warnings of severe weather emergency situations or the threat of such situations from the following:

### 1. National Weather Service (NWS) Weather Products

Weather warning messages are issued by NWS Weather Forecast Offices and various NWS specialized weather centers, such as NWS River Forecast Centers, the National Severe Storms Forecast Center, and the National Hurricane Center.

- a. NWS disseminates weather forecasts, watches, and warnings via the NOAA Weather Wire Service, which is a satellite communications system that broadcasts to specialized receiver terminals. In Virginia, NWS weather products, such as watches and warnings, are transmitted by Weather Wire to the Virginia Emergency Operations Center (VEOC) and they retransmit these weather messages to appropriate Area Warning Centers and Local Warning Points by Virginia Criminal Information Network (VCIN). The weather messages provided are:

1. Flood and flash flood watches and warnings
2. Severe weather watches and warnings
3. Tornado watches and warnings
4. Tropical weather watches and warnings
5. Space weather watches and warnings

**NOTE:** Many local radio and television stations subscribe to the NOAA Weather Wire Service and have installed terminals to receive weather products directly from the NWS.

- b. NOAA Weather Radio: The City also receives NWS weather warning disseminated by NOAA Weather Radio on tone-alert radios located in the Emergency Communications Center (911 Center), all Fire Stations, all Public Schools, Public Works Service Center, and the City's EOC.

### 2. Emergency Alert System (EAS)

EAS is intended to provide a means for government to provide emergency warning and instructions to the public. See ESF #2 (Communications) for further information on EAS. The City may receive EAS messages that contain warning information broadcast by:

- a. Federal authorities or agencies
- b. State government
- c. Other local governments

### 3. State Government

The Virginia EOC (VEOC) may issue warning messages. For example, an advisory may be issued to inland jurisdictions along major evacuation routes when large-scale evacuations begin in coastal areas due to a hurricane.

Warnings issued by the VEOC will be transmitted by Virginia Criminal Information Network (VCIN) to the Emergency Communications Center.

4. Local Official

City employees may provide warning of emergency situations they have discovered or that have been reported to their departments and been confirmed. Such situations should be reported to the Emergency Communications Center through any available means of communications.

5. Storm Spotter (SkyWarn)

These trained weather spotters (through National Weather Service) may also provide warning of severe weather, generally by calling 9-1-1. It is always advisable to confirm information on emergency situations reported by spotters before issuing public warning regarding those situations. Always report any severe weather phenomena to the Blacksburg NWS office (phone:540-552-1401 or 800-221-2856).

**C. Notification of City Officials**

When the Emergency Communications Center (ECC) receives warning of an eminent or occurring severe weather, it should simulcast such warnings to identified key personnel. Direct notification should be made to the Director and Coordinator of Emergency Management, Fire and EMS Battalion Chiefs, Police Chief, Deputy Chief of Police, Public Works Director, and the School Superintendent, so they can determine appropriate actions to deal with the situation. The Emergency Notification Matrix provided in Tab 1 of this annex indicates the departments and officials that should be notified of various types of emergency situations. Notification will be made by telephone/cell phone, radio, pager, or any other means available. More information concerning Warning Procedures is found in ESF #2 (Communications).

**D. Dissemination of Warnings to the Public (See details in Warning Annex)**

1. In the initial stages of an emergency situation, the ECC will, within the limits of the authority delegated, determine if a warning needs to be issued, and formulate a warning (using pre-scripted messages where possible), and disseminate it. When the EOC has been activated, the EOC will normally determine the needs on how, who, and what will be released. The PIO may disseminate emergency public information to the media directly. Refer to ESF #2 (Communications) for more information on Warnings and the release of public information.
2. The systems described below will be used to issue warnings and instructions to the public.

a. Emergency Alert System (EAS)

As a condition of licensing, all commercial radio and television stations and cable television companies must participate in EAS and use their facilities to relay warnings and instructions from government to the public. The Federal Communications Commission encourages licensees to broadcast local warning and instruction messages, but the final decision on broadcasting such messages rests with the broadcaster.

b. Route Alerting & Door- to-Door Warning

The public may be warned by route alerting using vehicles equipped with sirens and public address systems. Route alerting may not work well in some areas, including rural areas where residences are some distance from the road or for large buildings with few external windows.

c. NOAA Weather Radio

Pursuant to an agreement with the NWS Forecast Office in Blacksburg, those local officials authorized to release EAS messages (See Warning Support Annex) may request that the NWS activate the NOAA Weather Radio system to broadcast civil emergency messages. This system can broadcast voice messages to individuals who have a NOAA Weather Radio or receive Weather Radio broadcasts on cable television, broadcast television or local radio stations.

**E. Warning Special Facilities and Populations**

Special populations and facilities will be warned of severe weather by the following methods:

1. Visually-impaired: Reverse 911 (TTY), EAS messages on radio and NOAA Weather Radio;
2. Hearing-impaired: Reverse 911 (TTY), Captioned EAS messages on television and NOAA Weather Radio; and
3. Special facilities: Reverse 911 (TTY), EAS messages on radio/television and NOAA Weather Radio, public address systems on emergency response vehicles, route alerting, and door-to-door notification.

The City may have to alert those who reside in known flood hazard areas by using sirens on emergency response vehicles, route alerting, and door-to-door notification.

**F. Warnings to Other Governments and Agencies**

1. The ECC and/or the Emergency Management Coordinator are responsible for warning adjacent or nearby jurisdictions that may be affected by a severe weather phenomena originating within this jurisdiction.
2. The City is also responsible for informing the State EOC of major severe weather emergencies after time-sensitive warnings have been issued.

**Organization:**

1. The Director of Emergency Management, or his/her designee, shall provide general guidance for severe weather phenomenon regarding mitigation, preparedness, response, and recovery activities;
2. The Coordinator of Emergency Management shall provide specific guidance and direct mitigation, preparedness, response, and recovery activities pertaining to severe weather phenomenon. To assure an appropriate City response to severe weather events the Coordinator will assist City departments, private industry and the public with educational programs and help with the development of severe weather emergency response plans;

3. All severe weather related incidents will be managed using the Incident Command System;
4. The EOC may be activated to monitor a potential emergency situation or to respond to or recover from a severe weather event that is occurring or has occurred;
5. The Coordinator of Emergency Management shall conduct severe weather educational programs and campaigns for the public;
6. For specific time-sensitive emergency situations, the ECC has been delegated authority to determine if a warning needs to be issued, formulate a warning if necessary, and disseminate it (See Warning Support Annex); and
7. When the EOC has been activated, the EOC staff will normally determine who needs to be warned and how they are to be warned. The CEM, PIO, and other members of the staff will formulate and dispatch warning messages and public instructions.

### **III. Responsibilities**

#### **A. City Manager**

- a. Outline general policies on mitigation, preparedness, and response and recovery efforts for severe weather phenomena; and
- b. Ensure emergency public information concerning severe weather phenomena is provided to the public when appropriate.

#### **B. Coordinator of Emergency Management**

- a. Develop an adequate severe weather warning system;
- b. Develop and maintain procedures for operation of the warning systems, coordinating as necessary with other departments and agencies, the NWS, local radio and television stations, cable television companies, and other organizations (See Warning Annex);
- c. Provide for maintenance and periodic testing of warning system equipment;
- d. Give assistance and guidance to City departments in the development of severe weather response plans;
- e. Assist in the development of pre-scripted warning messages and Special News Advisories; and
- f. When the EOC is activated, assist in the development of warning messages and Special News Advisories; and
- g. Provide severe weather awareness education to the city employees and to the public.

#### **C. Emergency Communications Center (911 Center)**

- a. Receive and, if necessary, verify and acknowledge weather advisories, watches and warnings;
- b. Make notification to local officials concerning severe weather phenomena or conditions that could cause such situations as required;

- c. In accordance with SOP's or when directed, activate the necessary warning system(s) to alert and provide instructions to all departments and to the public;
  - d. Identify requirements for route alerting and door-to-door warnings for areas where other warning systems do not adequately reach the public; and
  - e. Develop and maintain hazard specific warning procedures covering warning receipt, verification, and dissemination.
- D. ESF #2 (Communications)
- a. In coordination with the Emergency Management Coordinator and City Attorney, develop pre-scripted warning messages and public instructions for severe weather phenomena that could occur in the City;
  - b. Develop warning messages and public instructions as necessary;
  - c. Develop procedures to facilitate the release of coordinated emergency public information to amplify basic information provided in warning messages;
  - d. Establish a media briefing area;
  - e. Periodically brief the media on local warning systems and warning procedures; and
  - f. Develop and disseminate educational materials relating to emergency weather warnings to the public.
- E. ESF #13 (Public Safety & Security)
- a. Provide units and personnel for route alerting and door-to-door warnings when requested;
  - b. Assist with evacuations;
  - c. Coordinate SAR missions;
  - d. Provide security to evacuated areas of the City; and
  - e. Close roads as needed and establish evacuation routes.
- F. Fire-EMS Department
- a. Provide units and personnel for route alerting and door-to-door warnings when requested;
  - b. Activate technical rescue teams as appropriate to the event;
  - c. Assist with evacuations; and
  - d. Assist with SAR missions.
- G. Health Department
- a. Support health, medical care and EMS support during emergency situations;
  - b. Provide public health information and education concerning the effects of a severe weather event;
  - c. Inspect food and water supplies after a severe weather event if necessary;

- d. Develop emergency public health regulations and orders due to a severe weather event; and
- e. Coordinate with the medical examiner the collection, identification, and interment of deceased victims resulting from a severe weather event.

H. ESF #3 (Public Works)

- a. Oversee the repair and restoration of key facilities and systems and removal of debris in the aftermath of a severe weather event;
- b. Identify contractors who can provide heavy and specialized equipment support during emergencies and individuals and businesses that will lease equipment to the City during emergencies;
- c. Assess damage to bridges, streets, City buildings, dams, and containment ponds;
- d. Assist in conducting damage assessments in the aftermath of a severe weather event; and
- e. Provide barricades and signage to assist with road detours.

I. City Schools

- a. Monitor radio and television and/or NOAA Weather Radio receivers for warnings and take appropriate actions to protect their patients, students, customers, and employees;
- b. Develop emergency response plans that deal with severe weather emergencies; and
- c. Test the plans to make sure individuals understand how to properly respond to weather warnings.

J. City departments and support agencies

- a. Report any severe weather phenomenon that merit warning local officials or the public to the Emergency Communications Center; and
- b. When requested, provide personnel and equipment to assist in route alerting or door-to-door warnings, SAR missions, debris cleanup and other duties as specified by the requesting authority.

## IV. **Glossary**

1. Advisory: Significant weather impact, but not meeting the warning criteria.
2. Blizzards: The most perilous of winter storms, characterized by low temperatures, strong winds, and large amounts of snow. Most of the snow accompanying a blizzard is fine, powdery particles of snow, which fall in such great quantities that at times visibility is only a few yards.
3. Blizzard Warnings: Issued when wind speeds of at least 35 mph are accompanied by considerable falling or blowing snow and temperatures of 20 degrees F or lower are expected to prevail for an extended period of time.

4. Blowing and Drifting Snow: Generally occur together and result from strong winds and falling snow or loose snow on the ground. "Blowing snow" is defined as snow lifted from the surface by wind and blow about to a degree that horizontal visibility is greatly restricted.
5. Cold Wave Warning: Indicates an expected rapid fall in temperature within a 24-hour period that will require substantially increased protection to agricultural, industrial, commercial, and social activity. The temperature falls and minimum temperatures required to justify cold wave warnings vary with the changing of the season. Regardless of the month, a cold wave warning is an alert to the public that during a forthcoming forecast period a change to very cold weather will require greater than normal protective measures.
6. Drifting snow: Is used in forecasts to indicate that strong winds will blow falling snow or loose snow on the ground into significant drifts.
7. Flash Floods: Flash floods are the result of intense storms dropping large amounts of rain within a short period of time, rapid snowmelts or dam failures. Flash floods occur with little or no warning and can reach full peak in only a few minutes.
8. Flood Warning: Is a forecast of impending floods advising of the expected severity of flooding (minor, moderate, or major), the affected river or body of water, and when and where flooding will begin.
9. Fujita - Pearson Tornado Scale: A descriptive scale categorizing tornadoes by intensity, relating intensity to damage potential.
10. Hazardous driving Warning: Are issued to indicate that falling, blowing or drifting snow, freezing rain or drizzle, sleet or strong winds will make driving difficult.
11. Heavy Snow warnings: Are issued to the public when a fall of four inches or more is expected in a 12 hour period, or a fall of six inches or more is expected in a 24-hour period.
12. Hurricane: A tropical cyclone with sustained surface winds (1-minute mean) of 63 knots (73 mph) or greater.
13. Hurricane/Tropical Storm Probabilities: Issued by the National Weather Service, expresses the percentage chance that the center of a hurricane/tropical storm will pass within approximately 65 miles of 44 pre-selected locations from Brownsville, Texas, to Eastport, Maine.
14. Hurricane Warning: Notification that within 24 hours or less an area may be subject to hurricane-force winds (74 miles per hour or greater).
15. Hurricane Watch: The notification of a possible hurricane threat to a community, within a 36 hour time period.
16. Ice Storm: Freezing rain or drizzle is called an Ice Storm. Moisture falls in liquid form but freezes upon impact. The term "heavy" is used to indicate an ice coating sufficiently heavy to cause significant damage to trees, overhead wires, and similar objects. Ice storms are sometimes incorrectly referred to as "sleet storms."
17. Saffir/Simpson Hurricane Scale: A descriptive scale categorizing hurricanes by intensity, relating intensity to damage potential. Refer to [Appendix 4](#) in this Annex to view the Saffir/Simpson Hurricane Scale.

18. Severe Blizzard Warnings: Are issued when blizzards of extreme proportions are expected and indicate wind with speeds of at least 45 mph plus a great density of falling or blowing snow and a temperature of 10 degrees or lower.
19. Severe Thunderstorm Watch: Issued by the National Weather Service when the weather conditions are such that a severe storm (damaging winds 58 miles per hour or more, or hail 3/4 of an inch in diameter or greater) is likely to develop.
20. Severe Thunderstorm Warning: Issued by the National Weather Service when a severe thunderstorm has been sighted or indicated by weather radar.
21. Sleet: Identified as frozen raindrops (ice pellets bounce when hitting the ground or other objects). Sleet does not stick to trees and wires but sleet in sufficient depths does cause hazardous driving conditions.
22. Snow: Snow in a forecast, without a qualifying word such as "occasional" or "intermittent", means that the fall of snow is of a steady nature and will probably continue for several hours.
23. Snow Flurries: Defined as snow falling for short durations at intermittent periods; however, the flurries may reduce visibility to an eighth of a mile or less. Accumulations from snow flurries are generally small.
24. Snow Squall: Are brief, intense falls of snow and are comparable to summer rain showers. They are accompanied by gusty surface winds.
25. Tornado: A rotating column of air usually accompanied by a funnel shaped downward extension of cloud with speeds up to 300 mph. Also called a cyclone. Refer to [Appendix 5](#) of this Annex to view the Fujita Scale.
26. Tornado Watch: Issued by the National Weather Service when weather conditions are such that tornadoes are likely to develop.
27. Tornado Warning: Issued by the National Weather Service when a tornado has been sighted or indicated by radar.
28. Tropical Cyclone: Includes hurricanes, tropical storms, and tropical depressions. These storms are born in the tropical and subtropical Atlantic Ocean including the Caribbean Sea and the Gulf of Mexico. Tropical cyclones are classified mainly by the wind speed.
29. Tropical Storm: Highest sustained wind speed ranges from 39 - 73 miles per hour.
30. Tropical Depression: Highest sustained wind speed is 39 mph or less.
31. Tropical Depression: A tropical low-pressure system in which the maximum sustained surface wind (1-minute mean) is 33 knots (38 mph) or less.
32. Tropical Disturbance: Organized convection originating in the tropics/sub-tropics with a non-frontal migratory character, sustained for twenty-four hours or more.
33. Tropical Storm: A tropical low-pressure system in which the maximum sustained surface wind (1-minute mean) ranges from 34 to 63 knots (39 to 73 mph).
34. Tropical Storm Warning: A warning that tropical storm conditions are expected in a specified area within twenty-four hours.

- 35. Tropical Storm Watch: Tropical storm conditions pose a threat to a specified area generally within thirty-six hours.
- 36. Watch: Term used as an alerting procedure for an event that may occur.
- 37. Warning: Issued to forewarn an event that is imminent or has high probability of occurring.
- 38. Wind Chill: Wind chill is a term used to describe the rate of heat loss on the human body resulting from the combined effect of low temperature and wind. As winds increase, heat is carried away from the body at a faster rate, driving down both the skin temperature and eventually the internal body temperature.
- 39. Winter Storm Watch: A storm is developing or approaching which may affect your area.
- 40. Winter Storm Warning: Severe winter weather conditions are imminent and will affect part or all of your area.

**Tab 1 to Severe Weather Annex- Emergency Notification Matrix**

<b>Emergency Situation</b>	<b>Departments to be Notified</b>
<b>FLOOD</b>	
Flash Flood Watch - local area	All Departments
Flash Flood Warning – local area	All Departments
Flood Watch – local area	All Departments
Flood Warning – local area	All Departments
<b>THUNDER STORM</b>	
Severe TS Watch – local area	All Departments
Severe TS Warning – local area	All Departments
<b>TROPICAL STORM</b>	
Tropical weather system in Gulf	Emergency Management
Tropical Weather Watch or Warning includes local area	All Departments
<b>TORNADO</b>	
Tornado Watch – local area	All Departments
Tornado Warning – local area	All Departments
<b>WINTER STORM</b>	
Winter Storm Watch – local area	All Departments
Winter Storm Warning – local area	All Departments

1. Develop draft warning messages and public messages for the impending threat.
2. Alert personnel for possible emergency operations; identify personnel for increased staffing during primary vulnerability period.

Tab 2 to Severe Weather Annex- Saffir Simpson Scale

Hurricane Ranking					
CATEGORY of Storm	CENTRAL PRESSURE Millibars Inches		WINDS Knots M.P.H.		STORM SURGE in Feet
1	>980	>28.94	64 - 82	74 – 95	4 - 5
2	965 - 979	28.50 - 28.91	83 - 95	96 - 110	6 - 8
3	945 - 964	27.91 - 28.47	96 - 113	111 - 130	9 - 12
4	920 - 944	27.17 - 27.88	114 - 135	131 - 155	13 - 18
5	<920	<27.17	>135	>155	>18

**Tab 3 to Severe Weather Annex- Fujita-Pearson Tornado Scale**

<b>F-0:</b>	40-72 mph, chimney damage, tree branches broken
<b>F-1:</b>	73-112 mph, mobile homes pushed off foundation or overturned
<b>F-2:</b>	113-157 mph, considerable damage, mobile homes demolished, trees uprooted
<b>F-3:</b>	158-205 mph, roofs and walls torn down, trains overturned, cars thrown
<b>F-4:</b>	207-260 mph, well-constructed walls leveled
<b>F-5:</b>	261-318 mph, homes lifted off foundation and carried considerable distances, autos thrown as far as 100 meters